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leaves. It measures $2\frac{1}{2}$ inches in height by 2 inches in depth and is constructed of strips of bark externally, over which is Spanish moss and hypnum moss held together by a large quantity of caterpillar silk. The interior of the nest is lavishly lined with the beautiful ochraceous buff substance from the young fern leaves, as in the first nest.

The eggs are of a white or whitish color speckled and spotted in the form of a wreath around the larger end with brownish red and lilac, and measure $.60 \times .50$, $.60 \times .50$, $.60 \times .50$, $.60 \times .49$ inch. I have known this bird ever since May 4, 1885, when I took a male at Caw Caw Swamp, Colleton County, S. C., while on a collecting trip with my friend the late William Brewster. I gave the bird to him in the flesh, and in his collection it still remains, but the nest and eggs have remained unknown until brought to light by this season's research.

My thanks are extended to Misses Ford and Pellew, who rendered me such valuable assistance on this memorable occasion.



A HERONRY ON LAKE CORMORANT, MINNESOTA.

BY HORACE GUNTHERP.

LAKE CORMORANT is located in the southwest corner of Becker County, Minnesota, and really consists of a chain of four or five small lakes extending in a general east and west direction with the exception of the last one in the series, which is situated north of the most western one. In a dry season, like the past summer, these lakes are almost, if not entirely, separated from each other by mud flats covered with a rank growth of rushes. In a wet year a rowboat can be polled through these shallow connecting straits with comparative ease. The shores of the lakes are in some places rocky, being composed of piles of glacial boulders, while in others they are shallow, with a muddy bottom in which rushes and submerged water plants grow abundantly, while here

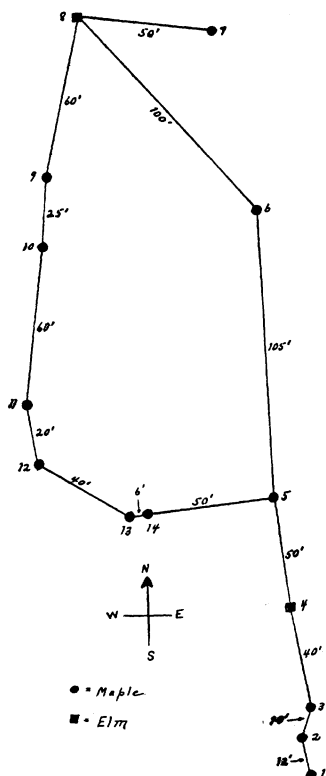
and there an occasional inlet is filled with water lilies. As the lakes are well stocked with fish, these numerous marshy spots form excellent feeding grounds for the shore waders. The surrounding country is rolling, and was once covered with a forest of elm, hard maple, and birch, with an occasional oak. At the present time a considerable portion of the land has been cleared and is under cultivation, the woods being confined mostly to the lake shores. All the salable timber was taken out some forty years ago, and as a result few large trees are seen, most of them ranging up to sixteen or eighteen inches in diameter.

Less than a quarter of a mile from the junction of the two western lakes, near the center of a heavily wooded knoll, stands a group of larger trees in which the Great Blue Herons have built their nests, forming a heronry of no mean size. These birds have been here at least ten years, according to farmers living in the neighborhood, and from all available information are increasing in numbers. A few years ago their nests were confined to a large elm (4)¹ near the south end of the heronry, but they have gradually spread, both north and south, from this original tree until now they occupy fourteen trees, the extreme limits of which cover approximately two hundred eighty-five feet in length and one hundred feet in width. The State laws in Minnesota give adequate protection to the Herons, as they not only impose a heavy fine for the destruction of the birds, but also specify that trees containing Herons' nests shall not be cut down. But besides the State protection, it is fortunate that the land on which the heronry stands is held by a group of gentlemen living in North Dakota, who use it for a summer home, and who are very much interested in preserving the woods and its life in as near a wild-state as possible.

The opportunity came to the writer to make a survey of the heronry during the month of August, 1918, while spending a short time camping on the neighboring lake. Several trips were made to the trees containing the nests, but, owing to the lateness of the season, only four young birds were seen in their nests. The large size of the heronry was not suspected by the owners of the land, their explorations having taken them no farther than the first

¹ Numbers in parentheses refer to trees shown in accompanying diagram.

large elm tree (4) near the south end of the heronry. In the accompanying sketch the measurements between the trees were roughly paced off, the trees not occupied by nests being omitted. Also, the size of the trees is only approximate, as no tape line nor rule was available for more accurate measurements.



Trees occupied by Herons.

The shape of the whole group is roughly a parallelogram with the long sides extending some one hundred seventy-five feet north and south, while it is about one hundred feet wide. From the southeast corner of this extends a row of four trees, the farthest one being one hundred ten feet from the corner. All of these trees are hard maple except two, and vary in size from eight to thirty-six inches, the majority of them being twenty or more inches in diameter. The two exceptions are elms, one (8) being located in the northwest corner, and the other (4) being the fourth from the south end of the detached line. Near the last-mentioned tree is the fallen trunk of another elm of good size which

has been dead for some time and which blew over last spring. Probably it held nests of the Heron at some past date, but not last year, as no remnants of nests were in or near its fallen branches. The hard maple (5) located at the southeast corner of the parallelogram has two trunks of about the same size, twenty inches.

The total number of nests in the trees and on the ground under them numbered sixty-six. Eight of this number were on the ground, but were in good condition, and had evidently been used

during the nesting season just closing. The large elm (4) seems to be the center of the colony, it having a total of thirty-three nests, five of which had fallen out. It is evident that the Herons in this particular heronry prefer the elm to the hard maple, as the only other elm (8) has the next largest number of nests in it, five. At first it was thought this was due to the greater height of the elms, as Herons prefer the highest trees, but in this case the hard maples used seem to be of practically the same height as the elms, but the latter have tops that spread more and so probably furnish more and better places for the placing of the nests. In the following table is given the size of each tree in the heronry, the number of nests it supported, and other data:

No.	Variety	Size in inches	Nests	Remarks
1	Hard maple	16	2	
2	" "	20	4	
3	" "	8	2	
4	Elm	36	33	
5	Hard maple	20	4	2 young birds
6	" "	24	4	
7	" "	20	1	
8	Elm	28	5	
9	Hard maple	20	1	
10	" "	22	1	
11	" "	36	2	
12	" "	24	3	2 young birds
13	" "	15	1	
14	" "	20	3	

In each case mentioned above the two young birds were in the same nest, and were well grown and able to move around with considerable ease among the branches of the tree in which the nest was placed.

The fallen nests were examined and found to consist of a mass of twigs forming a platform in some cases three feet in diameter and eighteen inches in thickness. No cementing material was used except on the upper surface, which was floored with mud. Whether this formed part of the original material used in the construction

of the nest, or was simply an accumulation of mud brought to the nest on the feet of the parent birds from their frequent trips to the marshy shores of the lake, is not clear. The solid nature of the structure of the Herons' nests is shown by the fact that a fifty-foot fall was apparently not able to damage them in the least.

The remains of different species of fish were on the ground under the trees together with parts of crayfishes. In regard to what Herons eat, Barrows¹ says, "The Blue Heron feeds mainly on fish and frogs, but also eats immense numbers of crayfish, small snakes, salamanders, insects (among them grasshoppers), meadow mice, and almost anything of an animal nature. So far as we know it never eats vegetable substances of any kind." On the other hand, Wilson² states (Vol. 2, p. 448) that it "also eats the seeds of that species of *nymphæ* usually called splatterdocks, so abundant along our freshwater ponds and rivers." When disturbed, the birds disgorge partly digested fish and other food. Heads and backbones of fish were numerous under the occupied trees, showing that the larger animals are torn to pieces and the bones picked by the young birds. This refuse accounts for the presence of numerous carrion beetles found under sticks and logs under the heronry.

A careful survey of the heronry at Lake Cormorant was made and is here recorded because it is located where it will in all probability be protected for years to come, and thus it will be possible to record the future growth of the colony accurately, and so we shall be able to form some estimate of the status of the Great Blue Heron in Minnesota and the Northwest.

¹ Barrows, Walter Bradford, 'Michigan Bird Life,' Lansing, Mich., 1912.

² Wilson, Alexander, 'American Ornithology,' 3 Vols., New York, 1877.